

Temporary travel time detection and information system on motorway A5/A8 around Karlsruhe

Due to the civil works with renovation of the road surface on motorway A5 near Ettlingen and the associated increased traffic congestion, the regional council Karlsruhe procured together with the federal council for traffic management and the ministry of traffic in Baden-Württemberg the planning and realization of a temporary system for measurement and display of travel times on motorway A5 around Karlsruhe and part of the subordinated network.

The system was planned by the engineering office AVT Consult based in Geilenkirchen. The realization was carried out by the profession company Green Way Systems in cooperation with company ITS-United.

The detection of the travel time on predefined routes of the main route and on the subordinated network is carried out by 2-channel bluetooth sensors as well as combi detectors for bluetooth and WLAN detection.

After privacy compliant anonymisation of the single MAC address the data will be transmitted to the DeepBlue Core Cloud center of ITS United via mobile radio communication. The traffic data will be evaluated there every single minute in dynamic intervals. The travel time of each individual vector respectively of each defined route will be transferred to the sub-master station of Green Way Systems. The roadside outstations and variable message signs in LED technology will be controlled and monitored via mobile radio communication by the sub-master station. In parallel, ITS-United transfers the loss times to the traffic management center Baden-Württemberg (SVZ-BW). The data is used there for control and information via the website „svz-bw.de“ and via the App „VerkehrsInfo BW“.

The travel time detection and display system is operated energy self-sustaining and can therefore be used at the urban and interurban road network.

The road users were informed about the current travel time to the end of the construction site at 2 locations per driving direction (Basel respectively Frankfurt). One sign location in front of and another one half way of the construction site.

The travel time of the total traffic matches the individual travel time of the single driver to a great extent due to the homogeneous speeds within the construction site.

This provides great confidence to the road users and promotes the acceptance of the system.

In addition, the road users will be informed on motorway A5/A8 at 3 locations ahead of the beginning of the construction site about the travel time on the respective main and detected subordinated routes.

The control and monitoring of the variable message signs are carried out according to TLS. The functional group 4 (FG4) is realized. The used variable message signs correspond to the EN 12966-1 to the full extent.

Project data

Project:	Travel time information system (RZA) FDE A5 Ettlingen
Customer:	Regional council Karlsruhe – unit 47.2
Execution time:	July 2018 – November 2018
Scope of work:	Delivery, installation and operation of 7 solar-powered, variable message signs in LED-RGB-matrix technology, including outstation, mounting device and prefabricated baseplate, 15 locations with Bluetooth detection and 3 webcam locations. Display of the current travel time via bluetooth sensors which were delivered by ITS United. Interface sub-master station Green Way Systems to DeepBlue Core Cloud center of ITS-United



Picture 1: display location in the construction site on motorway A5 (Source: Green Way Systems)



Picture 2: alternative routes are displayed ahead of the construction site (Source: Green Way Systems)

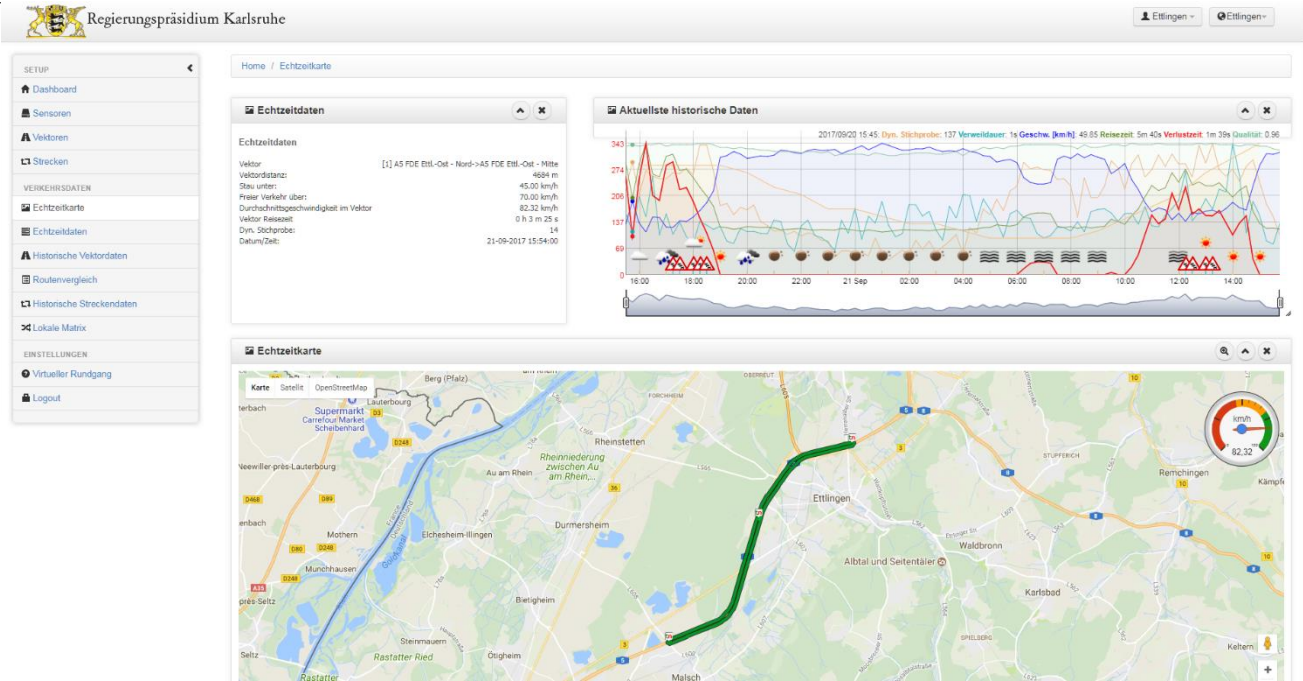
The traffic data is collected and visualized on the web GUI of the DeepBlue Core system.

In the real time map view a general overview of the detection area with the usual level of service coloring is displayed graphically. In addition, the parameters for the selected vector (driving direction dependent sector between 2 selected sensors) and the latest historic data are shown. An information of the status of locally queued sensors appears additionally (so called “stay time”).

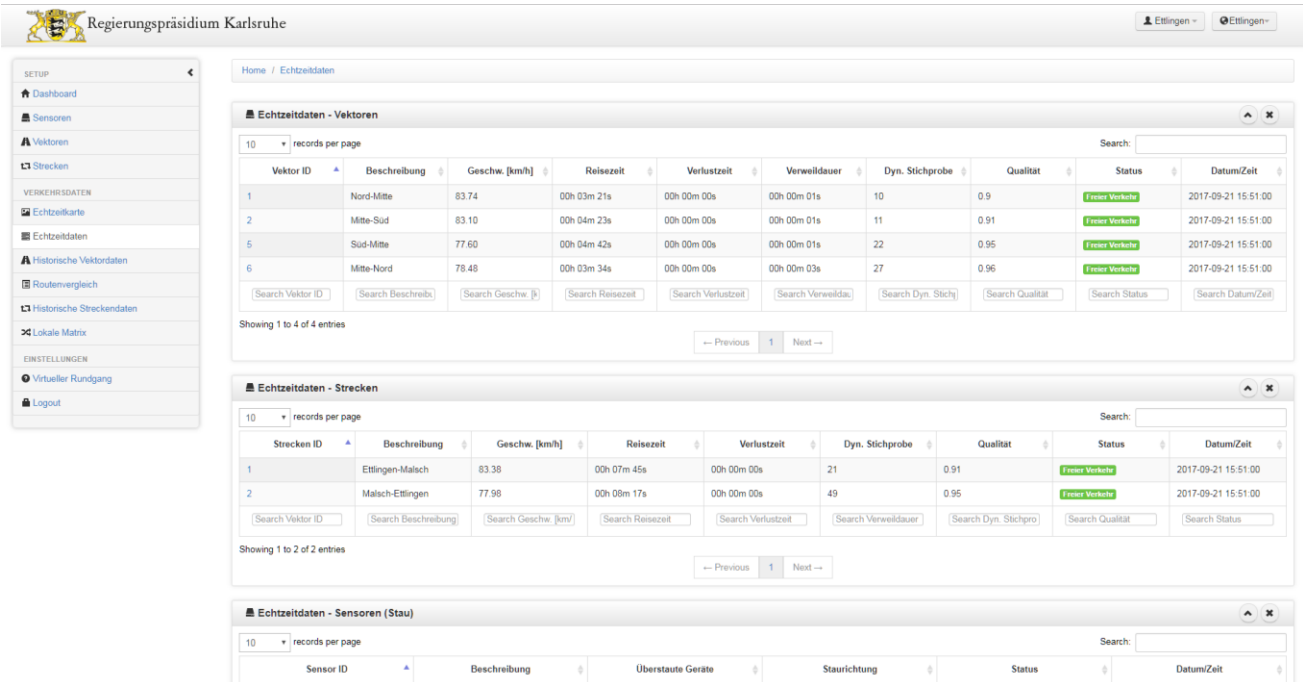
At construction sites with a longer duration (larger than 6 months) the central system allows for a calculation of expected values for the upcoming next 2 hours if enough data is available. These expected values are based on numerous influencing parameters.

Historical vector and route data are available next to the real time data for deeper analysis of the traffic behaviour and the observance rate.

Project reference: Travel time information A5 Ettlingen



Picture 3: illustration of the system with real-time map shown at DeepBlue Core Cloud centre VCC of ITS-United (Source: ITS-United)



Picture 4: illustration of the system with real-time data of travel times for defined routes (Source: ITS-United)



Picture 5: historical vector data with single matches (Source: ITS-United)

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